THE MURPHY CHEMICAL COMPANY LIMITED,
WHEATHAMPSTEAD,
HERTS.

ADVISORY BULLETIN No. 4

The Raspberry and Loganberry Beetle.

KEEP THESE BULLETINS IN THE GRATIS FILING COVER WE SUPPLY.

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LIFE HISTORY.

The adult beetles pass the winter buried in the soil, at a depth of one to twelve inches. Towards the end of April or early in May they emerge and are then golden brown in colour; later they tend to become grey or dark brown. At first they feed in and among the open flowers of hawthorn and apple blossom and later, on the buds and opening flowers of Raspberries and Loganberries.

Eggs are laid in the blossoms early in June (end of June or early July on Blackberries). They are white and shiny, about $\frac{1}{20}$th inch long and generally attached to the stamens and pistils in the centre of the flower. About twelve days later the eggs hatch and the tiny larvæ (grubs or maggots) feed for a time on the surface of the fruit; they then burrow right into the centre and feed on the "plug" and the surrounding fruit, completely spoiling the berries. The larvæ, which are pale yellowish in colour, with a brown head and darker markings on the middle of each segment, are abont $\frac{1}{3}$rd inch in length, when fully grown.

When fully fed they drop or crawl to the ground and construct a small earthen cell anywhere in the top twelve inches of soil. Here they remain as larvæ for about a month before pupating, then live as pupæ for just over a month and finally change to the adult beetle. The beetles remain in the earthen cells throughout the winter and emerge next April or May.

NATURE OF DAMAGE.

Raspberries, Loganberries, Blackberries and other berries of this type may all suffer from this, the most serious pest of these crops.

The damage may be caused either by the *adult beetles* feeding on the buds and flowers, or by the *larvæ* feeding on the developing fruitlets, causing small, shrivelled and deformed berries. In the case of a high infestation of this pest, especially on Loganberries, the crop is rendered entirely useless and unsaleable.

CONTROL.

The best control of this pest is obtained by the use of DERRIS or of NICOTINE SULPHATE as a Wet spray, or of DERRIS as a Dust. Both these materials can be used with safety, as they do not leave a poisonous residue on the fruit. The use of Lead Arsenate is not recommended because it is non-volatile and a poisonous deposit is left.

ON LOGANBERRIES (also Phenomenal Berry, Laxtonberry and Kings Acre Berry).

We recommend the adoption of one of the following methods :—

1. Against the *young larvæ* as they crawl about on the surface of the fruit, spray ten to fifteen days after full bloom and again, ten to fifteen days later. The approximate dates are June 10th to 15th and June 20th to 30th. Use Formula A or B as indicated below and thoroughly drench the young fruits with the wash. Generally about half to two-third gallons per plant is sufficient.

Formula A.

Derris	...	2 lbs.*	Derris	...	13 ozs.*
Soft Soap	...	5-10 lbs. or	Soft Soap	...	3 lbs.
Water	...	100 galls.	Water	...	40 galls.

Formula B.

Nicotine Sulphate (40%)	20 ozs.		Nicotine Sulphate (40%)	8 ozs.
Soft Soap	5-10 lbs.	or	Soft Soap	3 lbs.
Water	100 galls.		Water	40 galls.

**The Rotenone content of the diluted wash should be not less than ·004%*

In the case of hard water the soap in Formula A or B can be replaced by a good wetter and penetrant.

2. Against the *adult beetles* use a Derris Dust with a Rotenone content of not less than 0·22%. This should be applied thoroughly, first when the beetles are feeding on the developing leaves of the new shoots and again a few days later before the flowers open. A third dusting should be given when the flowers are opening. Generally about ¾ cwt. Derris Dust is sufficient for the first dusting, 1 cwt. for the second, and 2½ or 3 cwts. for the third, all per acre. The object of the dust is to kill the *adult beetles* before they can lay any eggs. The dust should therefore be directed as much as possible on to the blooms and the tips of the new growth.

ON RASPBERRIES.

We recommend the adoption of either Formula A or B as given above. The wash should be applied at the same time as for Loganberries. About 500 gallons of the wash per acre is generally sufficient.

Experiments to date on Raspberries have shown that wet spraying is somewhat superior to dusting, but if for any reason a dust is preferred, it should be applied at the same time as the dust for Loganberries.

ON BLACKBERRIES.

We recommend that both the Himalaya and Cutleaf types should be sprayed with either of the above washes (Formula A or B), directed against the *young larvæ* during the first and third weeks of July. Special care must be taken thoroughly to drench the blossom clusters and young fruits.

We do not recommend the use of a Derris Dust instead of a Wet Spray against the *young larvæ* on Raspberries, Loganberries, Blackberries, etc., because of the unsightly deposit it leaves, Dusts, when used, should be applied early against the *adult beetles* as described above, and wet sprays only should be used against *the larvæ*.

If you require further information on this, or any other pest, do not hesitate to write us. If possible, forward specimens, securely packed, of damaged material, or insects thought to be responsible for the damage.

April, 1934.

We supply :—

Spreadite (Wetter and Penetrant).

British Nicotine Sulphate (40%).

Insecticide Soft Soap.

Murphy's 100% Derris Powder.

Rotomort Derris Dust
(guaranteed Rotenone content).